When natural gas service reached the market town of Lambach in Upper Austria in 1996, local homeowners stopped burning wood. That meant they also stopped buying their firewood from historic Lambach Abbey, a monastery that had been harvesting wood from its own forests for more than 900 years.

Abbot Gotthard Schäfelnr decided he needed to find a new market for the low-grade wood from the forestry operation. So he put in a woodchip boiler to heat Lambach Abbey, along with its 700-student school. The monastery had been burning fossil fuels since 1920, when it installed a central heating plant, fueled at first with coal and then later with oil.

“When we first went back to wood from oil, we used a hand-fired solid-wood boiler,” says monastery forester Josef Wampl. “That was too much work. The abbot really wanted to get off fossil fuels so he decided to install these woodchip boilers. This is much better!”

It was in 2007, after 10 years with the solid-wood system, that the abbey invested in its new, fully automated, twin-boiler system. Each year the heating plant burns about 8,000 cubic meters (2,800 US tons) of woodchips, green or dry, plus sawdust, shavings, and bark.

“This has made it possible to get all the heat for our buildings from our own forestland and from nearby farmers,” Wampl reports. The boilers have individual heating capacities of 550 thermal kW (1.9 MMBtu/hour) and 1.1 million kilowatts (3.75 MMBtu/hour, for a total capacity of 1.65 MW thermal (5.6 MMBtu). The monastery sources wood from a radius of 15 kilometers, buying any wood that does not come from its own forests at €55 per tonne ($40 US per US ton) to heat a complex with 17 monks, 20 employees, and the 700 students.

‘No Problem’ Meeting Emissions Test

“This is not a forested area of Austria; here it is mostly farms,” Wampl says. “But the monastery has 470 hectares (about 1,100 acres) in small parcels all around the area. That supplies most of our wood, but we also buy some from local farmers who cut on their forest plots.”

The fuel supply is 80 percent fir, 20 percent hardwood. The monastery dries its greenest chips with a system that blows warm air up through its storage pile; some chips are air-dried simply by the time they spend in storage piles; and some are burned green.
“The state—Upper Austria—put in 30 percent of the cost of the system,” the monastery forester says. “To actually get the final check, we had to test the emissions to show they met the air standards. If they didn’t, we would have had to fix the system so it would pass. But we had no problem meeting the emissions test. All of the manufacturers of wood boilers in Austria can meet the national and state standards—otherwise they couldn’t stay in business.”

The Lambach abbot’s decision to go with wood heat was not exactly revolutionary. After all, the abbey heated with wood, also harvested from its own forests, for all but 60 of its first 960 years. The historic Benedictine monastery was founded in about 1040. Its monks were forced out during World War II by the Nazis, whose leader, Adolph Hitler, had lived in Lambach as a boy and attended a local school that employed Benedictine monks as teachers. The monastic community returned to the abbey after the war’s end.

Today, many Austrians are eager to get their heating needs met with a fuel other than natural gas, which is supplied by nearby Russia and was briefly cut off during a dispute between Russia and Ukraine in the winter of 2008. One Lambach family whose home is now heated with woodchips is forester Wampl’s.

His son is not that happy about it.

“At home we have a small woodchip heating system,” notes Stefan Wampl. “Frankly, it is a lot of work and kind of a pain, but my father gets free woodchips as part of his pay from the monastery. Woodchip systems are really good for big places, but not so good for a house.”